

REMARKS

1. Reconsideration and further prosecution of the above-identified application are respectfully requested in view of the amendments and discussion that follows. Claims 1-12, 14-22 and 24-29 are pending in this application. Claims 1-7 and 24-27 have been rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,783,322 to Nagai et al. Claims 8-11 have been rejected under 35 U.S.C. §103(a) as being obvious over Nagai et al. in view of U.S. Pat. No. 5,422,558 to Stewart. Claims 12, 14-22, 28 and 29 have been allowed. After a careful review, it has been concluded that the rejections are in error and the rejections are therefore traversed.

2. Claims 1-7 and 24-27 have been rejected as being obvious over Nagai et al. Instead of providing a basis for the rejection, the Examiner merely states that "Nagai has been discussed extensively in the previous Office Action(s) . . . The rejection is maintained for the reasons of record" (Office Action of 6/13/03, page 2).

In previous Office Actions (Office Action of 4/4/02), the Examiner has asserted that Nagai teaches of the use of the internal resistance of a battery. However, this assertion on the part of the Examiner has been clearly refuted.

For example, as demonstrated in the Response of 3/17/03 and in the Preliminary Amendment of 8/10/01 (page 5), the Examiner's internal impedance of Nagai is merely the "impedance of the transistor FET2" (Response of 3/17/03, page 4, middle of page). Rather than responding

to the substance of this assertion, the Examiner in the Office Action of 10/2/01 (page 2) makes the bald statement that "As discussed in a prior Office Action, the circuit is also responsive to the cell internal impedance exceeding a predetermined impedance, wherein such a condition prompts uncoupling of the voltage and preventing discharge". However, there is no "prior Office Action" that discusses this concept. Further, the Examiner makes not attempt to explain how, whatever circuit he is referring to, could possibly measure internal impedance through the use of an external resistance R0.

For example, the resistor R0 of Nagai et al. would be understood to be of a constant value because the resistor R0 is shown within the controller 12. In contrast, the internal impedance of a battery under the claimed invention would vary for any number of reasons.

The Response of 3/17/03 attempted to help the Examiner understand the basis of his misunderstanding by stating that "In this regard, a person of skill in the art would recognize that certain charge or discharge conditions within a cell can result in a variable internal battery impedance . . . For example, charging or discharging of a battery can result in gas bubbles (e.g., hydrogen) forming around the anode or cathode under conditions that are not related to a charge state . . . The presence of gas bubbles would be understood to inherently vary the internal impedance of the battery" (Response of 3/17/03, paragraph bridging pages 4-5). The quoted sections of the Response of 3/17/03 clearly refer to the internal impedance of a battery, not to the fixed resistor R0 of Nagai.

As explicitly stated by Nagai "the resistor R0 is a resistor for detecting charging/discharging currents by the

control circuit 12" (Nagai et al., col. 4, lines 40-42). Since the resistor R0 of Nagai et al. merely measures charging/discharging currents, it is clearly not an internal impedance of a battery.

Independent claims 1 and 24 have been further limited to "predetermined conditions substantially determined by said internal impedance reaching a predetermined impedance level". Support for this further limitation may be found at numerous locations throughout the written description (e.g., page 25, lines 16-26).

Further, as would be clear to anyone with even the most basic skills in the relevant art, in the situation where the voltage of a battery is varying during discharge and the internal impedance of the battery is also varying during discharge, there would be no apparent method of measuring internal impedance using the circuits of Nagai et al. If the Examiner is aware of some teaching that demonstrates this concept, then the Examiner is respectfully requested to provide a reference to such teaching, as required by 37 CFR §1.104(d)(1). If the Examiner is relying upon his own personal knowledge, then an affidavit is requested from the Examiner setting forth those facts as required by 37 CFR §1.104(d)(2).

Since Nagai et al. fails to teach or suggest the use of internal impedance, Nagai et al. fails to teach each and every claim limitation. Since Nagai et al. fails to teach each and every claim limitation, the rejection is believed to be improper and should be withdrawn.


3. Claims 8-11 have been rejected under 35 U.S.C. §103(a) as being obvious over Nagai et al. in view of Stewart. However, a review of Stewart reveals that Stewart also

fails to recognize the benefits of the use of the internal impedance of a battery. Since Nagai et al. and Stewart, individually, fail to teach or suggest the use of internal impedance, the combination of Nagai et al. and Stewart fails to teach or suggest each and every limitation of the claimed invention. Since the combination fails to teach or suggest each and every claim limitation, the rejection is believed to be improper and should be withdrawn.

4. Allowance of claims 1-12, 14-22 and 24-29, as now presented, is believed to be in order and such action is earnestly solicited. Should the Examiner be of the opinion that a telephone conference would expedite prosecution of the subject application, he is respectfully requested to telephone applicant's undersigned attorney.

Respectfully submitted,
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